UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,656	10/06/2003	Kevin Fairbairn	AMAT/1571.C3/DSM/BCVD/JW	5797

44257 7590 04/05/2006

PATTERSON & SHERIDAN, LLP
3040 POST OAK BOULEVARD, SUITE 1500
HOUSTON, TX 77056

EXAMINER	
MACARTHUR, SYLVIA	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8

Office Action Summary	Application No. 10/680,656	Applicant(s) FAIRBAIRN ET AL.	
	Examiner Sylvia R. MacArthur	**Art Unit** 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-31* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-7 and 9-31* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *06 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/29/2003
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 12 is objected to because of the following informalities: Claim 12 should be amended in line 7 to state "a second interior sidewall". Every occurrence of the term "annular sidewall" should "interior sidewall". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6,7, 10-19, 20-22 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strasser et al in view of Torii et al (US 5,755,88).

Strasser et al teaches a vacuum treatment apparatus wherein a chamber body defining first and second processing regions comprising a bottom wall, an interior sidewall (partition 13) in communication with the bottom wall and configured to separate the two processing regions, each of the processing regions has a single transfer port (partition 13 on the outer wall) formed through an outer sidewall of the chamber body, see Fig. 4a. Strasser broadly teaches the processing regions and fails to teach the support assembly and gas distribution assembly of each processing region.

Re claims 1, 12, 21: Torri teaches a bottom wall see Figs. 1-3, an annular sidewall 10/6, a substrate support assembly 51, a first gas distribution assembly 52, and second gas distribution assembly 52.

The motivation to modify the apparatus of Strasser to include the specific components of the processing regions as Torii is that the internal components of the processing regions of Torri provide suitable to perform semiconductor manufacturing each in processing region simultaneously. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the internal components of the processing regions of Torri into the vacuum treatment apparatus of Strasser et al.

Re claims 2, 17, 22: Torri teaches the gas distribution manifold is and showerhead is illustrated in Figs. 1-3.

Re claims 3, 19: Torri teaches the gas source is supplied by a high frequency source. Radio frequency is a known suitable type of high frequency power source.

Re claims 4, 16: A common pumping channel (exhaust conduit) line 8 is illustrated in Fig. 4a of Strasser et al

Re claims 6, 13,19, 28: Strasser fails to teach a vacuum source as the means of exhausting the processing regions.

Vacuum source 5 is taught by Torri. The motivation to modify the apparatus of Torri to include a vacuum source is that it is known suitable means for driving exhaust from the chamber. Thus, would have been obvious for one of ordinary skill in the art to use the vacuum source of Torri to evacuate the processing regions.

Re claim 7: See elements 2a-2c.

Re claims 10, 11, 14: The conduit is illustrated in Figs. 1-3, esp. Fig. 3

Re claim 15: See Fig. 4a of Strasser et al.

Re claims 20, 26: Strasser et al fails to teach a heater in the processing regions. Torri teaches that substrate holder 51 is a heater, see col. 4 line 58. The motivation to use the substrate holder of Torri et al is that it offers enhance process control of the manufacturing process by provide temperature control of the wafer. Thus, it would have been obvious for one ordinary skill in the art at the time of the claimed invention to provide temperature control of the semiconductor wafer by using the holder 51 of Torri.

Re claim 27: See Fig. 4a of Strasser et al.

Re claims 29-31: Both Strasser et al and Torri fail to teach a common gas source for both processing regions. Torri does teach a gas source for each respective chamber. It would be a matter of an intended use that the same gas supply both processing regions. Also, it is a matter of omission of one the redundant gas sources with the consequence of slow gas flow or the need for more piping to flow into two separate processing regions. According to In re Wilson 153 USPQ 740 it is obvious to omit an element with the consequent loss of its function. Thus, it would have been obvious to one of ordinary in the art at the time of the claimed invention to use a single gas source in the apparatus of Strasser et al as modified by Torri et al rather than using two of the same gas source to supply treatment gas to the processing regions.

4. Claims 1, 21, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strasser et al in view of Sandhu et al (US 2002/0195056).

The teachings of Strasser et al were discussed above. Strasser broadly teaches the processing regions and fails to teach the support assembly and gas distribution assembly of each processing region.

Sandhu et al teaches a bottom wall, an annular side wall 174, substrate support assemblies 150 a,b, and gas distributions assemblies 160a,b, see Fig. 7. The motivation to modify the apparatus of Strasser to include the specific components of the processing regions as Sandhu et al is that the internal components of the processing regions of Sandhu et al provide suitable to perform semiconductor manufacturing each in processing region simultaneously. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the internal components of the processing regions of Sandhu et al into the vacuum treatment apparatus of Strasser et al.

Re claims 29 and 31: Both Strasser et al and Sandhu fail to teach a common gas source for both processing regions. Sandhu does teach a gas source for each respective chamber. It would be a matter of an intended use that both processing regions be supplied by the same gas. Also, it is a matter of omission of one the redundant gas sources with the consequence of slow gas flow or the need for more piping to flow into two separate processing regions. According to In re Wilson 153 USPQ 740 it is obvious to omit an element with the consequent loss of its function. Thus, it would have been obvious to one of ordinary in the art at the time of the claimed invention to use a single gas source in the apparatus of Strasser et al as modified by Sandhu et al rather than using two of the same gas source to supply treatment gas to the processing regions.

5. Claims 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strasser in view of Torri as applied to claims 1,2,4,6,7, 10-18, 20-22 and 26-31above, and further in view of Yamada et al.

Both Strasser and Torri fail to illustrate the specific details of the showerhead used to supply gas to the chamber.

Yamada et al illustrates a showerhead made of a perforate plate with a gas distribution to the backside. See Figs. 6 and 7. The motivation to provide the apparatus of Strasser as modified by Torri et al with the showerhead of Yamada et al is that the perforated showerhead allows for a more uniform flow of gas to the wafer. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the showerhead design of Yamada et al is the means of supplying gas to the processing regions of Strasser as modified by Torri.

6. Claims 5,24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strasser in view of Torri as applied to claims 1,2,4,6,7, 10-18, 20-22 and 26-31 above, and further in view of Okamoto (US 6,017,396).

The teachings of Strasser in view of Torri were discussed above. Both fail to teach the pumping channel locating according to the recitations of claims 5, 24, and 25.

Fig. 3 of Okamoto illustrates 6b as the exhaust location. The motivation to modify the apparatus of Strasser and Torri et al to allow the exhaust location to be as Okamoto illustrates is that that this location allow the partition area between the two processing regions to be exhausted. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to exhaust connective space between the processing regions to be exhausted upon load/unload of the wafers.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strasser in view of Torri as applied to claims1,2,4,6,7, 10-18, 20-22 and 26-31 above, and further in view of Yamazaki (US 5,976,259).

The teachings of Strasser in view of Torri were discussed above. Both fail to teach a liner. Yamazaki teaches a liner 31. According to col. 2 lines 38-54, the motivation to modify the apparatus of Strasser in view of Torri is to prevent excited gas from exiting the processing regions. Thus, it would have been obvious to modify the apparatus of Strasser and Torri to use the liner of Yamazaki.

Response to Arguments

8. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

The new art presented above teaches an interior wall separating a processing chamber into two separate processing region each region comprising a substrate transfer port 13. This prior art expresses that a chamber separated into two processing regions is known in the art.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. The amendment describing that sidewall and interior rather than annular required the introduction of the prior art by Strasser et al.

10. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Parviz Hassanzadeh
Supervisory Primary Examiner
Art Unit 1763

Sylvia R MacArthur
Patent Examiner
Art Unit 1763

April 3, 2006